DOCUMENT RESUME

ED 300 401 TM 012 378

AUTHOR Duby, Aliza
TITLE Methodology of ETV Formative Evaluation.
SPONS AGENCY Human Sciences Research Council, Pretoria (South Africa).
PUB DATE Jun 87
NOTE 26p.; Paper presented at the Annual Conference of the Communication Association of Japan (Tokyo, Japan, June 20-21, 1987).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141) -- Viewpoints (120)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Childrens Television; *Educational Television; *Evaluation Methods; Evaluation Utilization; Foreign Countries; *Formative Evaluation; Program Development; *Programing (Broadcast); Self Evaluation (Groups)
IDENTIFIERS Childrens Television Workshop NY

ABSTRACT

Formative evaluation is discussed as it relates to educational television (ETV). Formative evaluation, used to improve a project during its development, is especially valuable in the production of television programs. Methods useful in the formative evaluation of ETV are: (1) try-out studies; (2) learner verification and revision; (3) self-formative evaluation; (4) needs assessment; (5) content analysis; and (6) goal-free evaluation. The ETV components being evaluated include the idea, rationale, content, script, and pilot programs. Advice should be solicited from experts in subject matter fields as well as educators, psychologists, and technical experts. Criteria for formative evaluation of ETV include cognitive and affective criteria as well as those of the medium itself. A model is presented for the ETV formative evaluation process. The experience of the Children's Television Workshop illustrates the concepts of formative evaluation. (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED300401

METHODOLOGY OF ETV FORMATIVE EVALUATION

BY

ALIZA DUBY

PRESENTED AT THE COMMUNICATION ASSOCIATION OF JAPAN

ANNUAL CONFERENCE, TOKYO, 20 - 21 JUNE 1987

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

ALIZA DUBY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The HSRC financial support is acknowledged
CAJ, TOKYO, 1987

TM012 378

BEST COPY AVAILABLE

METHODOLOGY OF ETV FORMATIVE EVALUATION

Contents

1. **Formative Evaluation**
   - 1.1 Formative Evaluation Methods
   - 1.2 Try-out Studies
   - 1.3 Learner Verification and Revision (LVR)
   - 1.4 Self-formative Evaluation
   - 1.5 Needs Assessment
   - 1.6 Content Analysis
   - 1.7 Goal-free Evaluation
   - 1.8 Experts

2. **Criteria for ETV Evaluation**
   - 2.1 Educational Criteria
     - 2.1.1 Cognitive Criteria
     - 2.1.2 Affective Criteria
     - 2.1.3 Medium Criteria

3. **The ETV Formative Evaluation Process**

4. **References**

Acknowledgement

The author wishes to thank Jennifer Dudley for editing work.

The HSRC financial support is acknowledged
CAJ, TOKYO, 1987

TM012378

Formative Evaluation

"Without a careful integration of formative evaluation activity, instructional development is nothing but an art form, an invention, usually with poor marks in aesthetics."
(Nathenson, 1980, p.11)

"Evaluation used to improve the course while it is still fluid, contributes more to improvement of education than evaluation used to appraise a product already placed on the market."
(Cronbach, 1963, 675)

Abedor (1972) defined formative programme evaluation as an attempt to answer three questions:

how to identify weak points in a programme;
how to analyse the weak points to develop revised hypotheses;
how to design and evaluate revisions.

The design of formative evaluation studies is explanatory and flexible; they emphasise interactive processes, make use of a variety of research instruments, and do not use comparative studies (Alkin, 1974).

As summarised by Nathenson (1980, p. 28):

"Formative interim evaluation provides feedback to the developer at the stage when he is working with pieces of a product which is not yet fully assembled. This may involve critical appraisal of the materials - by the developer himself and by his immediate colleagues and various outsiders such as specialists in instructional design, experts in the technical aspects of the medium through which the materials will be presented, and teachers who may be using the final materials."

2/...

Cook, Appleton, Conner, Shaffer, Tamkin & Weber (1975) defined formative evaluation as being typically concerned with a low level of generalisability.

For example, audience-oriented formative evaluation is usually limited to groups of recipients with specific characteristics such as age, intelligence, interests, socio-economic background, and other viewers' past experiences (Sturm and Jöng, 1981). Although the formative evaluator gathers information from other relevant evaluation reports, he always has to conduct specific formative evaluation for a given programme in order to ensure the success of its unique objectives and nuances.

The generalisability is the main issue that differentiates "formative evaluation" from "formative research".

Formative research formulates the generalisability of hypothesis (Nathenson, 1980), whereas formative evaluation concentrates on pragmatic and practical issues. Formative research is also conducted solely by the researcher, whereas formative evaluation emphasises in-house team work. The main purpose of formative research is to collect data systematically from audience tests in order to evaluate progress towards the achievement of objectives that have been clearly identified in advance (Palmer, 1974), whereas this paper suggest that objectives that emerge during the ETV development should also be considered.

The next figure summarises some of the qualities that differentiate formative evaluation from formative research..

Figure 1 : Difference between Formative Research and Formative Evaluation

Formative Research	Formative Evaluation
High level of generalisability	Low level of generalisability
Formulation of generalisability of hypothesis	Pragmatic and practical issues
Conducted by researchers	Conducted by researcher plus in-house developers, users, etc.
Systematic data-collection research e.g. control group design	Uses all kinds of methods e.g non-control group design
Comparative studies	Non-comparative studies
Matching data with predetermined objectives	Matching data with objectives as they occur in the programme

Formative Evaluation Methods

Owing to their extensive formative evaluation activities, the CTW earned their success. Cook and Curtin (1985) assume four reasons for the success of the CTW programmes:

a. The funding of long pre-broadcast periods in which "needs analysis is conducted, objectives are make explicit, initial plans are critiqued, and segments and pilots are produced, tested and modified." (p. 95)

b. The establishment of co-operative teams in which producers pay close attention to formative evaluators and subject experts, and use their advice when making programme decisions.

c. Producers continuing to pay attention to formative evaluation feedback during the full production phase.

d. Testing acceptance of pilot programmes produced with formative evaluation, by the target audience.

In summary:

> "Formative researchers and content experts are useful so that, without them, the pedagogic or artistic quality of production would be less." (p. 95).

Two innovative features of formative activities used in the CTW model should be emphasised:

a. Reiterative formative evaluation feedback.

b. Continuity of in-house staff involvement in the formative evaluation / development process.

These two features not only contribute to the immediate and continual improvement of the product, but also to the immediate and continual improvement of the staff involved.

A summary of the CTW formative evaluation activities is shown in the next figure.

4/...

Figure 2 : Formative Evaluation Activities in the CTW

1. Pre-production Phase

   1.1 Experts conduct needs analysis and hammer out detailed behavioural objectives linked to the founder's definition of the educational problem to be tackled.

   1.2 Executive producer and experts agree on behavioural objectives.

   1.3 Producers and other production staff are hired for their proved creative skills and their willingness to work with researchers.

   1.4 Researchers and experts develop production philosophy and format.

2. Pilot Programme

   2.1 Internal researchers conduct formative evaluation (laboratory style) on comprehensibility and appeal of segments to viewer population and modification of segments takes place.

   2.2 Pilot show (one or more) is produced to estimate audience appeal and comprehensibility (interview, questionnaire, mechanical) and to select best pilot programme and best features.

   2.3 Findings are discussed through informal, supportive teamwork.

3. Full Production

   3.1 Full-scale production, which receives permanent feedback from researchers and experts.

In summary, the early formative evaluation activities during the pre-production phases and the continuation of these activities during the pilot stages are the key to ETV success.

5/...

Try-out Studies

The try-out study is actually a formative evaluation method. It is characterised by the testing of a short programme or segments as a programme on a sample of the target audience (Cronbach, 1972; Alkin, 1974). It differs from a typical research activity in that it uses one or a few learners only and uses non-control group design (Markele, 1967). This process is widely used among ETV production companies and is mentioned by many researchers (Baggaley and Duck, 1976; Land, 1972; Lesser, 1974; Markele, 1967; Mates, 1980; Nickerson, 1979; Palmer, 1978; and Tidhar, 1979).

It is worth pointing out that although the try-out studies brought the CTW success, some production houses imitating the CTW model failed to achieve the same success, because their investigation focused on pilot programme test studies rather than on the continuation and reiteration of formative evaluation activities during the early development stages of one programme (Cook and Curtin, 1985).

Learner Verification and Revision (LVR)

Learner Verification and Revision imply that the learning effectiveness of a programe will be improved if it is taken through a cycle of try-outs with a sample of the target audience, by revision based on the feedback (Nathenson, 1980).

Gruppen and Lumsdaine (1966) and Fleming (1963) proved that in cases of revised television programmes based on try-out studies, the performance level of viewers was raised by 20-30% over the original.

Later researchers (e.g. Nathenson, 1980; Baker, 1985) argue with these results since these researchers tested the original against revised versions. By doing so they did not prove that revised programmes based on try-outs improve programmes more than revised programmes based on, for example, the producer's intuition.

Nevertheless, LVR is carried out summatively and mentioned here only to complete the picture, as it is a formatively-oriented evaluation activity.

6/...

Self-formative Evaluation (Duby, 1985b)

"Television producers do not generally seem to involve themselves directly in evaluation activities." (Nathenson, 1980, p. 29)

This paper suggests employing the Self-formative Evaluation approach. (Duby, 1985). It follows that ETV developers and in-house evaluators working as evaluation-development teams using cognitive, affective and moral criteria, improve the programme impact and the staff performance in one.

It is not to be confused with Self-evaluation, which has a psychotherapeutic contingent. It is also different from evaluation conducted by an outside researcher.

Closer contact between developers and evaluators, the possibility of simultaneous planning of development and evaluation activities, and the self-improvement effect are the main features of self-formative evaluation.

The advantages of using self-evaluation in the formative evaluation of ETV are summarised as follows:

a. Self-evaluation reduces the threat associated with the activities of an external evaluator.

b. An individual who has carried out self-evaluation activities tends to show openness to evaluation carried out by others.

c. Self-evaluation increases awareness of the benefits that may be gained by the evaluation.

d. The party carrying out the self-evaluation has first-hand knowledge of the actual evaluation needs and is familiar with the context variable, which may affect the validity of the findings.

e. Self-evaluation carried out jointly by developers and users strengthens communication between them.

f. Self-evaluation is a powerful tool for self-improvement (Abedor, 1972).

7/...

g. The producer, who also functions as an evaluator, is constantly informed about the evaluation results and is able to make decisions to improve the programme.

h. The user himself is involved in the evaluation and is therefore better motivated to play an active role in producing educational TV programmes.

i. Information obtained from "formative evaluation" is assimilated into the production process quickly.

j. The involvement of the ETVP developer and the ETVP user in the production ensures the maximum suitability of the programme to fulfil its intended purpose.

k. An ETVP evaluated in its early stages will cost less and will be produced faster than an ETVP evaluated in later stages of production.

Needs Assessment

Needs assessment activities are also part of the formative evaluation activities. Needs assessment studies attempt to determine:

- what the target audience should understand to master the content of a certain programme;
- what needs have already been met;
- the discrepancies between the desired targets and actual conditions.

(Cook and Curtin, 1985)

Scriven (1981) alerts the researcher to the confusion between necessary needs and desired ideals, although: "True needs are considerably harder to establish than felt wants, because true needs are often unknown to those who have them - possibly even contrary to what they want." Thus he suggests that one "drop the use of ideal level as the key level in the definition of need" (p. 102), instead using the necessary level.

8/...

It follows that the role of the ETV formative evaluator, as early as the planning stage, is to identify the assessed needs and to examine the feasibility of fulfilling them by producing a suitable TV programme.

The results of needs assessment can also used later in the formative evaluation process when the objectives of the programme emerge. The evaluator can measure the beneficial quality of such objectives using the assessed needs as a yardstick.

Content Analysis

Content analysis is defined by Scriven (1981) as "the evaluative or pre-evaluative process of systematically determining the characteristics of a body of materials." (p.31)

The techniques for this evaluation process are mainly:

- counting frequency of certain kinds of words;
- analysing the plot in order to determine balanced appearance of certain images, e.g. males, females, children, adults, blacks or whites ... ;
- monitoring reinforced main ideas or main objectives against side issues, etc.

Its main use is to ensure that the right learning effects (pay-offs) accrue as a result of exposure to the right amount of selected effects. Thus content analysis can result in content validity that indicates whether the content appears to meet all requirements for congruence between claimed and actual content, only claimed requirements and/or meets unclaimed objectives.

This semi-quantitive, semi-qualatative examination technique can already be applied in the early stages of TV development, when there is a written draft of the programme.

For example, a TV programme teaching basic scientific concepts (Ziki Zikombot, RTV1, 1985) was planned, aimed at pre-school children. Research taught us that in order to influence the retention of concepts by this target audience it was advisable to repeat the message by verbal or visual techniques.(Rydin, 1973). The evaluator counted how many times each of the main concepts appeared

9/...

in the script. It was found that concepts such as the "round shape" and "the sun is made of fire" were repeated verbally in the script, and reinforced again by visuals in the pilot programme, were remembered by the audience. However, "what the moon is made of" was not repeated in the programme and was not remembered by the viewers.

Goal-free Evaluation

The traditional evaluation method is to check a programme, using its pre-determined objectives as criteria.

Eisner (1979) gives reasons against pre-specification of objects for curriculum planning:

- The teaching process is dynamic and complicated and results in a variety of outputs that are difficult to predict and therefore impossible to prescribe as objectives.

- A desired action or determined content may be the basis for an educational programme and not necessarily a final determined objective.

Domingo (1979) stated that the determined objectives do not contain all that can be achieved by the learner using that programme.

Mager (1975) termed the additional criteria "reference criteria" and Scriven (1974) called the mothod "goal-free evaluation".

"In this approach, the evaluator would make a deliberate attempt not to be co-opted by the rhetoric of programme goals," and would use the programme itself as a source of criteria, regardless of the stated goals. The evaluator identifies issues that exist in the programmes and evaluates the importance of these in meeting educational needs (Scriven, 1974).

Consequently it is the evaluator's role to rephrase the objectives as they occur. New objectives arising in the script should be identified, phrased and examined. However, they should be limited in number, or avoided, to prevent an endless development process.

10/...

Experts

To create a valuable, comprehensive and accurate programme, not only TV professionals, but experts from other areas should be called in for advice during the production. These should include psychologists, educationists, sociologists, experts on the relevant subject matter, technical experts in relevant inter-disciplinary fields, etc. (Cronbach, 1963; Leide, 1977; Lewy, 1973).

Selection of experts should be based on their known academic and practical expertise. Their expertise should not stem from their formal qualifications only; they should also be known for their credibility.

The advantages of expert input as an evaluation tool are summarised here:

- Expert contribution broadens the scope of the kind of information collected on each evaluation programme (Nevo, 1985).

- Expert opinion in the production stage gives one an extra constructional tool of evaluation (Duby, 1985a).

- The programme is an educational programme and its makers therefore cannot afford to expose their audience to mistakes. Experts can prevent mistakes (Duby, 1985a).

- It is cheaper in terms of time and labour to employ experts than it is to try out a pilot or a final programme (Duby, 1985a).

- Expert evaluation can help to detect problems in the early stage of programme development (Lewy, 1973; Nevo, 1985).

- In the very early stages of production there is almost no other reliable method of evaluation.

- At early stages of programme development producers are still open to criticism, but at later stages they are more concerned to justify what they have produced (Lewy, 1973).

- It is easier to manipulate the time schedule of experts than of an audience for experiments, observations and tests (Lewy, 1973).

Criteria for ETV Evaluation

Scriven (1974) suggests that for each educational project a "Production Evaluation Checklist" (p. 7) should be compiled.

"Each of these conditions must be met to have impeccable ground for a conclusion of merit for an educational programme." (p. 8)

Educational Criteria

Tyler (1950) mentions three sources of educational criteria:

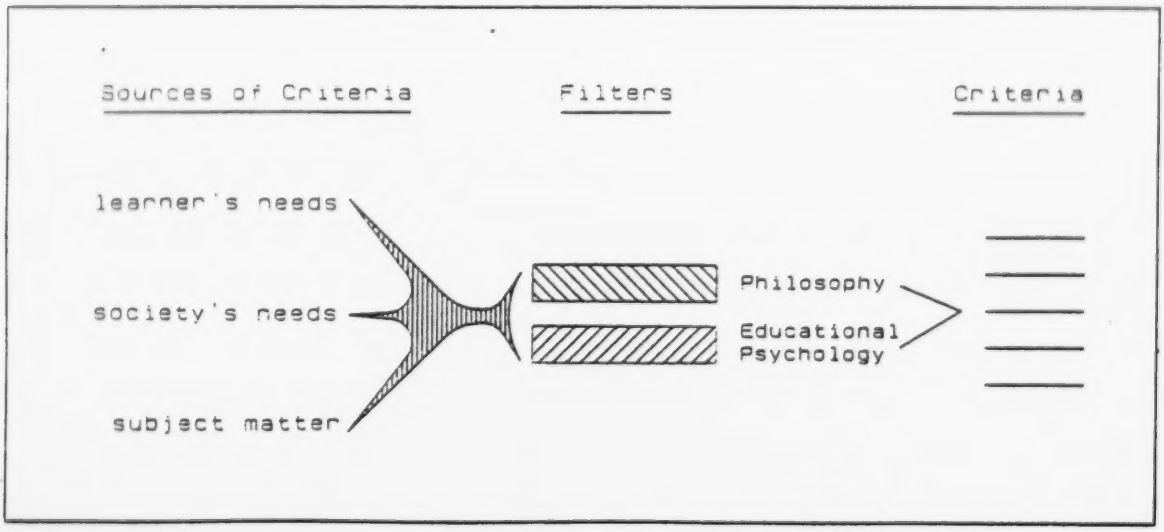
- the society;
- the learner's needs;
- the subject matter,

and two filters for the final selection of criteria:

- philosophy;
- education psychology.

Tyler's model is schematically represented as follows

Figure 3 : Tyler's Approach



12/....

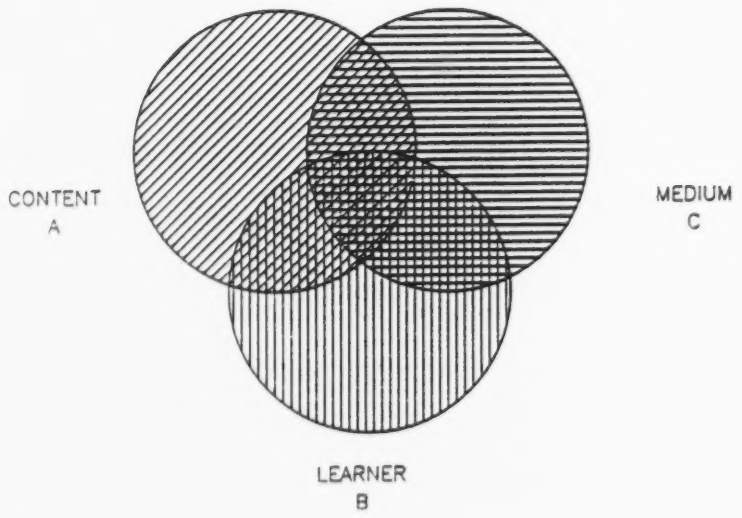
Cognitive Criteria

Three elements are joined to create an instructional TV situation (Duby, 1985b):

- the content;
- TV features;
- viewer characteristics.

The three components are presented in Figure 4.

Figure 4 : Overlap Model of the Three Components of the TV Instructional Situation.



13/...

Criteria for the analysis of ETV programmes should therefore stem from the three zones. The "learner" component is further divided into cognitive and affective factors (Bloom, 1976), and also concerns the unique needs of particular learner groups (Guillford, 1959).

Sturm and Jōng (1981) researched the information-processing ability of 5 to 7-year-olds reacting to verbal and pictorial stimulus of a TV programme, and found that indeed in this "intuitive stage" (Piaget's term), visualisation of verbal information is more effective than merely verbal information, and visual information accompanied by verbal information is more effective than merely visual information; also, detailed commentary is more effective than simple commentary. This indicates that to achieve a greater effect on the children's comprehension, more commentary is required in ETV for this age group than for older children: commentary that provides narration for aspects of the programme other than those that are not directly self-evident from the pictorial material.

They also found some differences between the 5, 6 and 7-year-olds. The 6 and 7-year-old children are more able to form appropriate images from what they hear than the 5-year-olds, who need more verbal reinforcement of verbal information. "The younger children rely more on verbal cues which direct their attention." (This addition does not interfere with the comprehension of visually depicted events by the older children.)

They also found that the format of presentation is supposed to be "consistent with the criteria which characterise the stage of intuitive thought," (p. 61) i.e. in an orderly sequence.

When the cognitive capacity of 5 to 7-year-olds is taken into account, this age-group is able to comprehend even relatively long programmes.

Simultaneous analysis of the ETVP potential and of target audience abilities will provide the researcher with data on the programme's cognitive suitability for a certain audience. for example, the concrete/abstract elements in the programme should be analysed and matched with the viewer's ability. This is why one can produce a TV programme aimed at pre-school children, who may find a book too abstract a learning instrument (Mincowich, 1966).

14/...

Affective Criteria

The power of TV as an instructional medium lies in its ability to influence viewers' attitudes. Criteria from that field should thus be employed in evaluating whether the ETVP consists of such values and whether they match the objectives of the instructor.

Medium Criteria

Since the technical characteristics of a programme or its format influence the understanding of the individual viewer, they should be watched and evaluated (Baggaley, 1980; Burke et all, 1981; Paluzzi, 1980).

Wasche (1966) suggests a technical criterion:

- What knowledge is needed about technical aspects of TV and TV equipment to be able to use TV as an instructional tool?

Aversa and Forman (1978) suggest three categories of criteria:

Content criteria, such as:

Is the content important?
Are there content errors?
Are there ambiguous areas of content?
Is there an appropriate amount of content?
Does the programme present interesting and challenging ideas?

- Design criteria, such as:

Is the programme either too simple or too difficult?
Is the programme well organised?
Is information clearly presented in the programme?
Are too many or only a few topics treated?
Does the programme develop the main points adequately?
Are the main points well visualised?

15/...

Production criteria, such as:

Is the voice-over technique used effectively?
Are existing stills and footage put to good use?
Is there continuity between sequences?
Are the sequences of appropriate length?
Is the level of comments made by the host(s) and other actors appropriate?
Is there a good relationship between the audio and video tracks?

Coldevin (1975, 1976) sub-divides the production criteria into:

Technical variables, i.e.:

camera angle, close-ups, set, lighting effects, sound effects, selection of colours, etc. To these Burke, Dowalibly and McKee (1981) add editing techniques such as cuts, linking shots, sequencing of shots, etc.

Format, i.e.:

opening or closing, pace (does the target audience see it as too fast, too slow, or correct?) (Baggaley, 1980), built-in repetitions (Rydin, 1973). Burke et al (1981) suggest criteria such as the relation between verbal and visual density of information, and whether the educational message is salient.

Performance variations, i.e.:

performer's age, sex, level of eye contact, etc.

Salomon (1976) conceptualises TV as having its own symbolic codes and says, "It is the code into which TV is coded that makes the largest and most important difference in learning." (p. 26)

The learner must therefore familiarise himself with these TV codes in order to "translate" the message transmitted into a meaningful cognitive message. The knowledge acquired from each use of a different code is different in amount and content. He found, for example, "children viewing the version which emphasised close-ups acquired more knowledge pertaining to the relationship between parts of wholes." (p. 26)

The close-up technique can develop cognitive skills of analysis and differentiation in the viewer. It can also be used for emphasis. One should therefore test an educational programme on issues such as:

> Does the close-up emphasise an important element (from the educational point of view) or does it distract the viewer's attention to a side-issue?
>
> If the differentiation between two elements is the educational objective of the programme, is the close-up used to help the viewer distinguish between the two?

Salomon found that "children viewing the version which entailed logical gaps excelled in their comprehension of the plot's logical structure and continuity." (1976: 26) Such planned and unplanned gaps can serve as educational criteria as well. Other such criteria include the use of humour in the programme, drama effects, use of colour (Clements, 1984), etc.

"One of TV's major advantages is its capacity to overtly and explicitly show a process, a transformation ... . TV alone can visually show a transformation which is anlogous, or even similar, to what ought to take place in our minds." (Salamon, 1976) The evaluator can therefore examine whether the programme is about a process or a static situation and can conclude accordingly what to show in the TV programme and what to leave for books and other static aids.

Lesser (1977) and Cook and Curtin (1985) pointed out that the "Sesame Street" programmes, which imitated the pace of American advertisements, probably caused hyperactivity, short attention spans and lack of interest in later slower-paced class activities in young viewers. This crucial statement was heavily criticised (Anderson, 1985). Still, the pace of a programme can be tested with target audiences to establish acceptability and popularity, but a criterion has not yet been established to say what pace a TV programme should have.

17/...

The ETV Formative Evaluation Process

Figure 5 shows the distinguishable phases of ETV programme development.

Figure 5 : ETV Developmental Stages

ETV Phase of Development	ETV Component to Evaluate
1. Preparation	1.1 Idea 1.2 Rationale
2. Development	2.1 Content 2.2 Script 2.3 Pilot Programme
3. Final Production	3.1 Final Programme

When only the idea of an ETV exists, one can examine whether there is a need for such a programme: Has the subject not already been covered by other teaching aids? Does the programme focus on the needs of a defined target group? What is the best presentation format (broadcasting, video cassettes, drama, documentary, etc.) on which to produce this content for that audience?

Experts can refine the definition of the target audience and can provide data on its particular needs and abilities. The goals of the programme should be defined at this stage.

An analysis of cost effectiveness should also be conducted during the early stages of development. The purpose of this analysis is to determine the programme costs (which affect its potential effectiveness).

A rationale for the programme should be written, based on adequate needs assessment research, cost analysis and expert advice. The evaluator has to see that the programme objectives are defined in the rationale.

Based on the rationale, the manager contracts the programme content writer. Experts on the subject are invited to provide information on content, educational objectives and their order of importance.

18/...

Subject experts continually provide the producers with advice and judgemental input about the scientific accuracy of the programme content. Educational specialists can also advise on the ability of the target audience to accept, absorb or use the ETV message.

In the "content" and "script" stages, evaluators can test the documents and match the written script with the rationale and with the content, to ensure that scientific and behavioural objectives are treated and oriented correctly.

In the "script" stage, criteria affiliated with the three sources mentioned in Figure 4 are already used, such as: suitability of the programme format to content; potential of the medium to fulfill the subject requirements; and suitability of a programme to target audience needs.

At this stage the evaluation team can be expanded. Duby (1985b, c) showed that it is possible to collect valid and credible data on programme comprehension and acceptability from potential programme users such as teachers and TV professionals.

For this reason ETV production houses usually produce pilot segments or pilot programmes for previewing and formative evaluating (Baggaley et al, 1976; Cook and Curtin, 1985; Cook et al , 1975; Tidhar, 1979).

Editing techniques are also the subject of formative evaluation in the later stages of the ETV development.

The fact that the introduction of changes or corrections to material on video tape costs much more than corrections on paper, leads one to conclude that the earlier the change is made, the cheaper it is.

As already discussed, in the early stages of producing a TV programme, paper work, brainstorming sessions and discussions take place. Because many people are involved in the formative evaluation activities in these stages they are time-consuming, but are relatively inexpensive processes. One can spend up to 70% of the total development time on preparation activities whereas only 30% of the time is spent on real production.

19/...

In summary, when intensive and reiterative formative evaluation takes place in early production stages, the testing of preliminary TV programme segments and/or the testing of the pilot show can be limited mainly to production issues: presentation, setting, sound, acceptability of characters, and editing techniques. But the rationale of the programme, its content, objectives, validity, suitability, accuracy, and educational contribution should be researched in the early stages.

A model that presents the Formative Evaluation Process in the ETVP development is shown in Figure 6.

Figure 6 : ETV Formative Evaluation Process

ETV Component	Formative Evaluation Activities
Idea	needs assessment coverage of subject defining of goals defining the target audience selecting the format cost analysis cost effectiveness
Rationale	refining the target audience collecting expert advice defining objectives
Content	refining objectives putting objectives in order of importance content-analysis comparison with rationale refining definition of objectives (reference criteria) collecting input from experts
Script	interpreting expert input (accuracy, acceptability, suitability) matching with "content" and "rationale" analysing TV technicalities matching content, medium and target audience collecting educationists'/users' advice
Pilot Programmes	testing production issues and acceptability with viewers

REFERENCES

Abedor, A.J. (1972). Development and Field of a Model of Formative Evaluation. Viewpoint, 47: 9-43.

Alkin, M.C. (1974). Evaluation and Decision-Making : The Title VII Experience. Los Angeles : University of California, Center for Study and Evaluation.

Anderson, D.R. (1985). The influence of Television on children's attentional abilities. University of Massachusetts, Amherdt, MA 01003, December, 1985.

Aversa, F.M. & Forman, D.C. (1978). Issues in Evaluation of Educational Television Programmes, NSPI Journal, March. (p.16-18).

Baggaley, J.P. (1980). Psychology of the TV Image. Westmead : Gower Pub, U.K.

Baggaley, J. & Duck, S. (1976). Dynamics of television. Gouer, Hampshire.

Baker, E. (1985). Curriculum packages. In Husen, T. and Postlethwaite, T.N. (eds.) International Encyclopedia of Education. Oxford : Pergamon Press, 1985.

Bloom, G.S. (1976). Human Characteristics and School Learning. New York : McGraw-Hill.

Burke, N.C.; Dowaligy, F.J. & McKee, B.G. (1981). A Film Evaluation Checklist to Describe Instructionally Relevant Film Characteristics : A Rater Reliability Study, Department of Educational Research and Development National Technical Institute for the Deaf, Paper Series No. 42.

Coldevin, G.O. (1975). The differential effects of voice-over, super-imposition and combined review treatments as production strategies for ETV programming, in Baggaley, J. Jameson, G.H. & Marchant, H. (eds) Communication and Learning, Aspects of Educational Technology, vol 8, London; Pitman.

Coldevin, G.D. (1976). Comparative Effectiveness of TV production Variable. Journal of Educational Television and Other Media, 2(3): 87-92.

Cook, T.D.; Appleton, H.; Conner, R.F.; Shaffer, A.; Tamkin, G. & WEber, S.J. (1975). 'Sesame Street' Revisited. New York: Russel Sage.

Cook, T.D. & Curtin, T.R. (1985). ERIC/ECTJ Annual Review Paper, Evaluating the CTW Model for Producing Educational Television, ECTJ, 33(2): 91-112 Washington D.C.

Cronbach, L.J. (1963). Course Improvement through Evaluation. Teachers' College Record. 64(5): 672-683.

21/.....

Domingo, A. (1979). Classifying the Concept of Educational Objectives. Lisbon: Groupo de travolko Posto o Ensi no da Biologica (mimegraph).

Duby, A. (1976). Design of Instructional Materials, Bulletin for Educational Technology, Israel: Ministry ofEducation and Culture, The Pedagogic Centre, No. 10, (Hebrew).

Duby, A. (1985a). Formative Evaluation of Educational Television Programmes. In Van Zyl, Breytenbach, Duby & Grove, (Eds). Educational Programmes RTV1, Johannesburg: SABC, 1(1): 25-34.

Duby, A. (1985b). Executive Report, Exploratory study for the Fomative Evaluation of the ETV Programmes 'Ziki Zikombot', Johannesburg: ERTV1, SABC.

Duby, A. (1986a). Self-formative Evaluation of Instructional materials with References to Instructional TV and Games, Paper delivered at the ICA, International Communication Association Annual Conference, Chicago, 22-26 May.

Duby, A. (In process.) Formative Evaluation during the Early Stages of ETVP Development, in Baggaley, Duby, Lewy (ed) Criteria for the Evaluation of ETV Programmes, Johannesburg: SABC.

Duby, A. (1986b). Self-formative Evaluation of Instructional Games, conducted by the Instructor. Paper submitted to the ISAGA conference, Paris, July, 1986.

Duby, A. (In process). Self-formative Evaluation of Instructional Materials Educational Technology, New Jersey.

Eisner, E.A. (1979). The Educational Imagination: The Design and Evaluation of Social Programmes. New York : MacMillan

Guilford, J.P. (1959). Three Faces of the Intellect. The American Psychologist, 17: 469-479.

Land, H.W. (1972). The Children's Television Workshop: How and Why it Works. Jericho, N.Y: Nassau Board of Co-operative Educational Services.

Leide, G. (1977). Expert Judgements as Evaluation Data. In Lewy, A. (ed.) Handbook of Curriculum Evaluation, New York Longmans.

Lessor, G.S. (1974). Children and Television: Lessons from Sesame Street. New York: Vintage Books.

Lewy, A. (1973). Utilising Experts' Judgements in the Process of Curriculum Evaluation. California: Centre for the Study of Evaluation UCLA Graduate School of Education, Report 87(7)

22/.....

Mager, R.F. (1975). Preparing Instructional objectives, second edition. USA: F. Caron Publishers Inc.

Markele, S.M. (1967). Empiricial Testing of Programmes. In P.C. Lange (ed.) Programmed Instructions, The Sixty Sixth yearbook of National Society for the Study of Education Part, II. Chicago: NNSE.

Minkowich, A. (1966). Experience and Abstract Thinking, Megamat 14(4): 172-199.

Nathenson, M.B. and Euan, S.H. (1980). Using Feedback to improve learning materials. London: Croom Helm Ltd.

Nevo, D. (1985). Experts' Opinion: A Powerful Evaluation tool. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, March 31 - April 4, 1985.

Palmer, E.L. (1974). Formative Research in the Production of Television for Children. In D. Olsen (ed.). Media and symbols: The Form of Expression, Communication and Education. The Seventy-third yearbook of the national Society for the Study of Education. Chicago: University of Chicago Press.

Palmer, E.L. (1978). A Pedagogical Analysis of Recurrent Formate on Sesame Street and Electric Company. Paper presented at the International Conference on Children's Television, Amsterdam.

Paluzzi, J.V. (1980). Interest and Presentational Formats in J. Baggaley (ed). Proceedings of the Third International Conference on Experimental Research in Television Instruction, Memorial University of Newfoundland, p. 22-35.

Piaget, J. (1952). The Origins of Intelligence in Children., New York: University Press.

Rydin, I. (1973). Informational processes in pre-school children. Stockholm Swedish Broadcasting Corporation.

Salomon, G. (1976). A Cognitive Approach to Media. Educational Technology. (5) : 25-27.

Scriven, M. (1974). Standards for the Evaluation of Educational Programmes and Products. In Borich, G.D. (ed). Evaluating Educational Programmes and Products, Englewood Cliffs: Educational Technology Publications, P. 5-26.

Sturm, H. and Jöng, S. (1981). Information Processing by young children, Piaget's theory of intellectual development applied to Radio and Television. K.F. Sour : München.

23/.....

Tidhar, C. (1979). Thirteen Years of Evaluation in Instructional Television Centre in Israel, Tel-Aviv: ITV.

Tyler, R.W. (1950) Basic Principles of Curriculum and Instruction. Chicago: Illinois: University of Chicago Press, 1950.

Wasche, G.A. (1966). Utilising Television in the Classroom. Meno Park C.A.: Pacific Coast Publishers.

Ziki Zikombot (1985). SABC Educational Programmes.